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**NORTH  
SASKATCHEWAN  
RIVER  
DIVERSION**

**BY  
W. PEARCE**

**1919**



Ottawa, 21st February, 1919.

I have made a study of the data on the contour maps for Alberta and Saskatchewan issued by the Irrigation Branch of the Department of Interior, intituled "Map showing land forms".

I enclose with this copy of a sketch illustrating the proposition in Southern Alberta showing in a broken line what, from the said contour maps, I think, would probably be the route of a canal to take water out of the Saskatchewan River and store it in Buffalo Lake. It is probable that this route can be materially shortened by making cuts of some depth and also, possibly by erecting dams of some height across the streams which have to be intersected by said canal, thereby creating reservoirs. There cannot be too many reservoirs in a scheme of this kind.

It might be possible that many of these reservoirs could be utilized at least a portion of the year for furnishing small powers, valuable for the settlers residing in their vicinity.

In regard to the intake from the North Saskatchewan River. Looking at the country from the railway line along the north bank of that river, it struck me that it would probably be feasible to take the water out of the North Saskatchewan and throw it into the drainage of Prairie Creek.

There seemed to be considerable of a depression or a low pass leading from what I thought was the drainage of said creek to bank of the Saskatchewan. Surveys will, of course, show whether such exists and if it is financially practicable or not. The problem is to take the water out of the North Saskatchewan and get it on the plateau to the east and north of the Clear Water River drainage. From Rocky Mountain House up, the rise in the Saskatchewan River is very rapid and of course it is only a question of distance to attack the water high enough so that it can be placed where stated.

It might be well to recite that my view of this scheme is not immediately an irrigation proposition; rather having in view the possibilities of making a very large area - bounded on the south by the Red Deer and South Saskatchewan Rivers; on the east by the South Saskatchewan; on the north by the North Saskatchewan and Battle Rivers and on the west approximately the 2500' contour; (see sketch) attractive for stock-raising by supplying every draw, creek channel or ravine, so that they will carry a bountiful supply of water for stock-watering and potable purposes during a large portion of the year and by cheap storage during the balance. In addition there would be a very large area lying along and under the canal leading from the Saskatchewan River to Buffalo Lake which could profitably be irrigated from said canal for the purpose of growing forage.

Such a scheme would at once make this section an ideal stock country and could then be utilized for what probably would support the greatest possible population and the largest output, namely, devoting it to dairying at the same time maintaining, in fact increasing its grain output.



Having these living streams all over the country the settlers in turn could divert them and grow a plentiful supply of forage consisting of hay and vegetables, thereby through manure fertilization maintaining the soil in such condition that it will not be destroyed by the winds, a problem that is now going on.

The maps show the elevation of Buffalo Lake as 2536 feet. It would be very advisable if its elevation for storage purposes could be raised to 2570 feet enabling 20 feet to be drawn off. Raising it to that elevation, however, would probably cause considerable flooding and damage and also necessitate probably a large expenditure in dams. That, however, can only be ascertained by surveys.

If 20 feet of water can be drawn off at Buffalo Lake, it would probably mean 800,000 acre feet. Taking the water out of this reservoir at an elevation of 2550 would leave, <sup>upwards of</sup> after allowing the necessary grades for the ditch, ~~about~~ 18,000,000 acres at an elevation lower than the canal. What percentage of it would have water put thereon is a matter, of course, to be determined by surveys, but knowing the country thoroughly as I do, I would estimate that if it came down to a question of irrigation, at least 30% of that could be cheaply irrigated, and of the entire area at least 75 % would have stock-water furnished it so that no stock would have to travel for water a prohibitive distance, and in little or none of it would there not be sufficient ground water after two or three years utilization of this scheme, so that good water would be furnished from wells.

To illustrate the advantages, from an agricultural standpoint, that a reasonable supply of water is valuable even if confined to stock-watering, and, to a slight extent, to the growth of hay, one has to compare the stock of the following municipal units, as per census of 1916, where the conditions of stock-watering are only medium, with those that have not these conditions. Take for instance:- Municipal Units 159, 160, 248, 249, 250, 280, 281, 321, 399 and 400 contrasted with 212, 213, 214, 241, 242, and 243, in the Province of Alberta.

On the 30th of June last I travelled on the Grand Trunk Pacific from Edmonton to Saskatoon, and for the stretch of country extending from Wainwright to within 30 miles of Saskatoon, probably 90% of the crop was either suffering greatly from drought or blown out almost altogether by the winds. That was particularly noticeable in the immediate vicinity of Wilkie, where if there had been sufficient moisture there would have been a fine crop, at least so far as straw is concerned, which also means, when desired, a good growth of grass. The same conditions existed on what is known as the Goose Lake Branch of the Canadian Northern from about Youngstown on that line to within 40 miles of Saskatoon. Both of those districts could be irrigated from this scheme, anyone who saw them in the conditions they were in last summer and who knew anything

about



about irrigation, would unhesitatingly state that irrigation was necessary. I am only speaking of the areas that I then saw. No doubt, under the water that could be cheaply laid on under this scheme an immense area would be furnished with the requirements necessary to make it ideal for stock. The area that could have stock-watering and irrigation profitably applied thereon is limited only by the amount of water that is available from the North Saskatchewan at the points where tapped.

It is a question for consideration whether a scheme of this nature, started in the immediate future, would not supply labour which, owing to the return of soldiers and other causes, may require very serious consideration.

It is most advisable that as much storage capacity as can be reasonably provided should be made available. By that means the flow of water can be continuous and the reservoirs filled up during those portions of the year that it is not necessary to take water out of them. You thereby decrease the necessary capacity of your intakes or supply canals and thus reduce the cost.

In a work of this nature, however, it is not necessary or advisable that your canals or other works should be constructed to the capacity required when the entire system would be completed. It will take many years before such an extensive area would utilize all the water that could be supplied to advantage.

If during the first construction of the canals the question of enlargement by means of dredges be kept in view, the excavated material can generally be so placed as not to interfere with further enlargements, in other words, would not require to be moved.

The Dominion Government controlling the waters of that country probably makes it incumbent on it to make the surveys necessary to determine the most beneficial utilization thereof, and it therefore is probably not asking too much from it to determine whether this scheme is financially feasible or not. In the past the said Government has made such surveys. It is upwards of twenty-five years since such were instituted. When that is determined, if favourable, and an approximation of the cost arrived at, the next step would be who is to provide the monies to carry it out?

To arrive at some intelligent idea of the advantages of the scheme the following argument has been adopted.

First - limiting it wholly to a stock-watering proposition.

#### A L B E R T A.

Have grouped the following municipal units:

#### Occupied Lands

212, 213, 214, 241, 242 & 243 as "A"



248, 249, 250, 280, 281 & 371 as "B"  
 399 & 400 as "C"  
 159 & 160 as "D"

"A" is bare prairie as good, if not better soil than "B", which excepting 371, is also bare prairie. 371 has considerable bluffs and does not average as high as the other units, but by including it brings the area of occupied land nearly the same as "A". In average years "A" is poorly supplied with water for stock; about 60% of "B" is fairly well supplied.

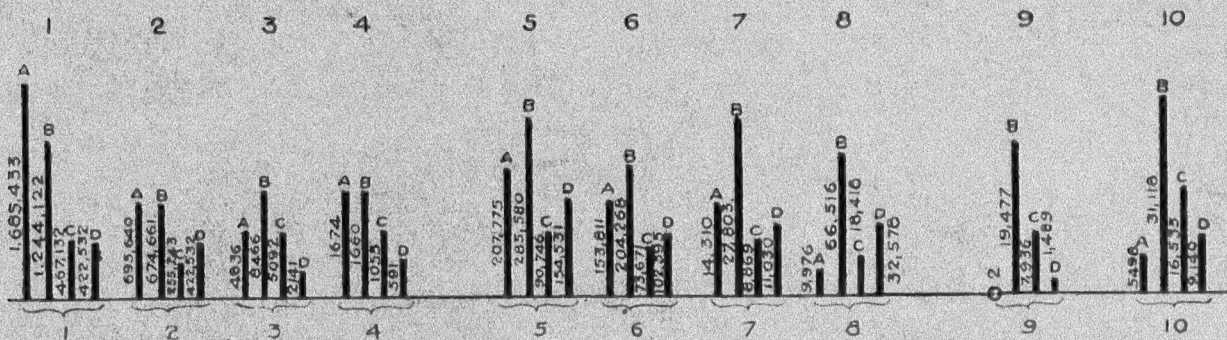
"C" is not quite as well supplied with water as "B" and further has considerable of its area occupied by poplar, bluffs and sloughs.

"D" unit 159 is fair agricultural land, 160 is in foothills and a high rolling country, a great deal very hilly, well watered and admirably fitted for cattle grazing.

Horses can be pastured in a country in which water is scarce much better than cattle, as they will go longer without water and will travel farther for it without deterioration.

#### SCHEDULE 1.

	"A"	"B"	"C"	"D"
1. Total Area of group in acres	1,685,433	1,244,122	467,132	422,532
2. " " Occupied Lands	695,640	674,661	255,243	422,532
3. Population Rural	4,836	8,466	5,092	2,141
4. No. of Farms	1,674	1,660	1,055	591
5. No. of Acres Improved	207,775	285,580	90,746	154,531
6. No. of Acres Cropped	153,811	204,268	73,671	102,395
7. No. of Horses	14,310	27,803	8,869	11,030
8. No. of Cattle	9,976	66,516	18,418	32,578
9. No. of Sheep	2	19,477	7,936	1,489
10. No. of Pigs	5,498	31,118	16,535	9,140

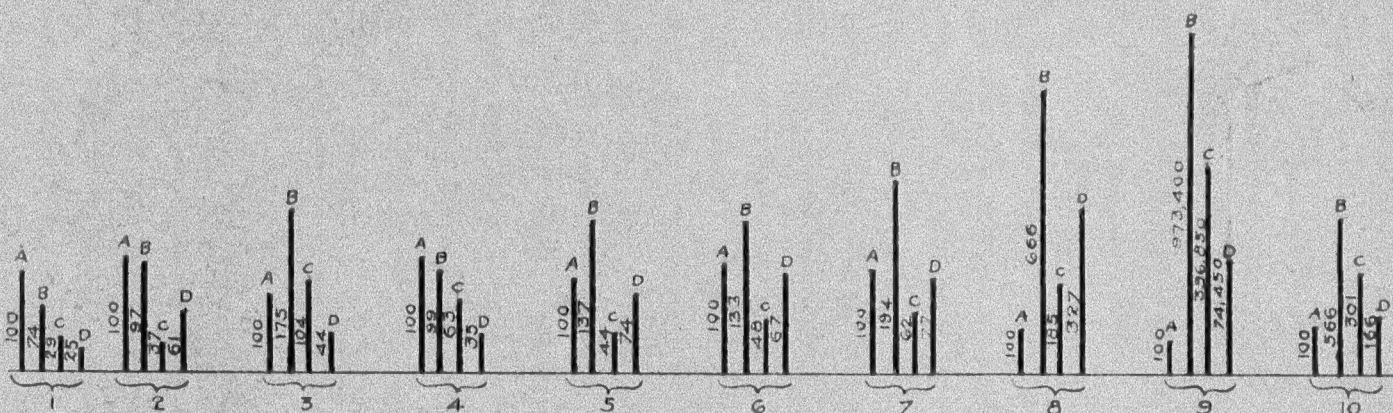




SCHEDULE 2.

Placing "A" at 100%, that of the others is as follows:-

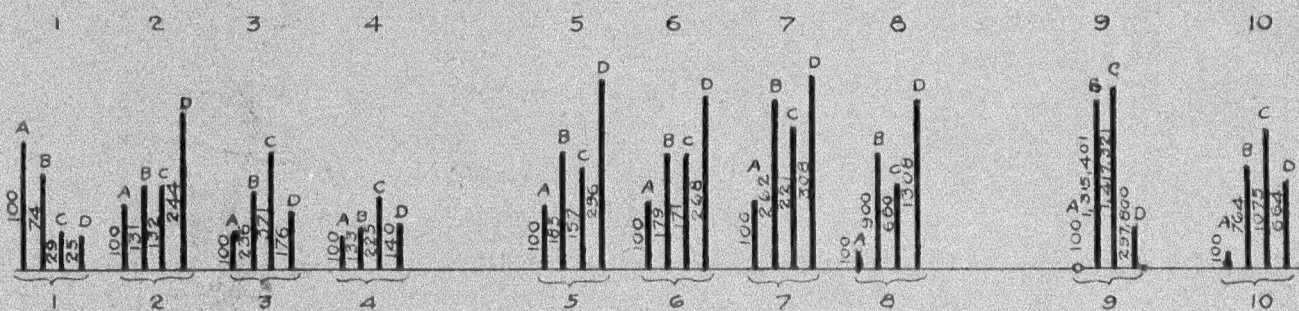
	"A"	"B"	"C"	"D"
1. Total Area of group in Acres	100	74	29	25
2. " " Occupied	100	97	37	61
3. Rural Population	100	175	104	44
4. No. of Farms	100	99	63	35
5. No. of acres improved	100	137	44	74
6. No. of acres Cropped	100	133	48	67
7. No. of Horses	100	194	62	77
8. No. of Cattle	100	666	185	327
9. No. of Sheep	100	973,400	396,850	74,450
10. No. of Pigs	100	566	301	166



SCHEDULE 3.

Applying the foregoing percentages in No.1. to the others Nos. 2 to 10 inclusive; and for purposes of comparison based on areas such must be applied.

	"A"	"B"	"C"	"D"
1. Total Area per Group in acres	100	74	29	25
2. " " Occupied	100	131	132	244
3. Rural population	100	236	371	176
4. No. of Farms	100	133	225	140
5. " " Acres improved	100	185	157	296
6. " " " cropped	100	179	171	268
7. " " Horses	100	262	221	308
8. " " Cattle	100	900	660	1308
9. " " Sheep	100	1315401	1417321	297800
10. " " Pigs	100	764	1075	664





SCHEDULE. 4.

COMPARISON.

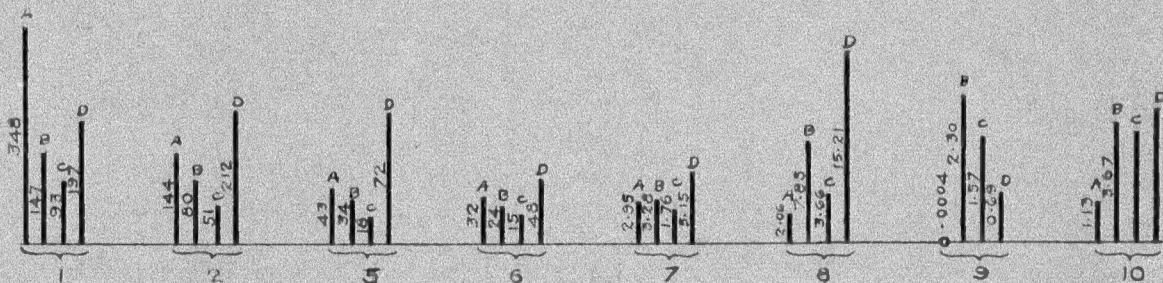
In No.2	the increase in B.C.& D. over A is	31	32 &	144% respec-
In No.3	do do do	136	211 &	76%tively.
In No.4	do do do	33	125 &	40% do
In No.5	do do do	85	57 &	196% do
In No.6	do do do	79	71 &	168% do
In No.7	do do do	162	121 &	208% do
In No.8	do do do	800	560 &	1208% do
In No.9	do do do	1315301	1417221 &	297800% do
In No.10	do do do	664	975 &	564% do

The foregoing comparisons are it is thought most illuminating. Particularly note the great increase in stock Nos. 7,8,9 and ten. Even in No.6 it shows that for cropping a plentiful distribution of water is a great advantage. Note also particularly the increase in No.3 population. These comparisons are based on the total area of the respective groups.

SCHEDULE 5.

Comparison "A" & "B" areas on units of population.

	"A"	"B"	"C"	"D"
1. No. of acres in No. 1 for each unit of population	348.5	146.9	92.8	197.3
2. No. of acres in No. 2 (occupied) for each unit of population	143.84	79.69	50.75	211.82
5. No. of acres in No.5 (improved) for each unit of population	42.96	33.73	18.04	72.17
6. No. of acres in No.6 (cropped) for each unit of population	31.80	24.12	14.64	47.82
7. No. of horses in No.7 for each unit of population	2.95	3.28	1.76	5.15
8. No. of cattle in No.8 for each unit of population	2.06	7.85	3.6623	15.21
9. No. of sheep in No.9 for each unit of population	.00041	2.300	1.57	.69
10. No. of pigs in No.10 for each unit of population	1.13	3.67	3.287	4.26



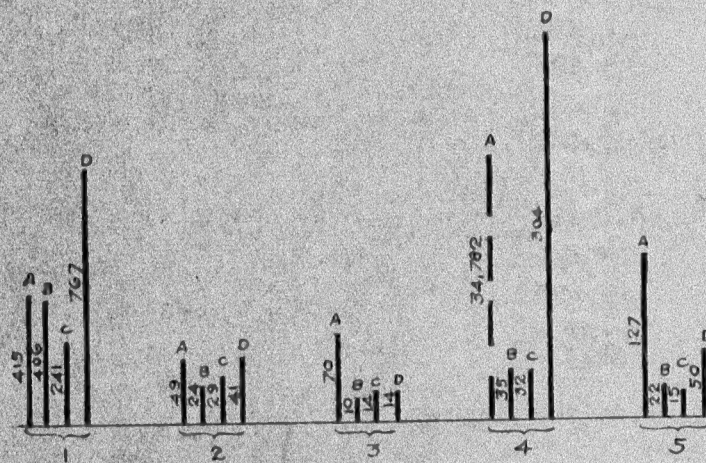


The preceding comparisons based on the units of population is also very interesting and instructive. The stock Nos. 8, 9 and 10 (other than horses) demonstrate clearly the conditions of plentiful water supply. Number 7 (horses) there is not much increase because of horses necessary for cultivation.

SCHEDULE 6.

Comparison "A" "B" "C" & "D" based on acres of occupied lands.

	"A"	"B"	"C"	"D"
(No. of Acres, No.2, per Farm	415.55	406.42	241.93	767.36
(No. of Acres, No.2, per Horse	48.61	24.26	28.77	41.11
(No. of Acres, No.2, per Cow	69.73	10.14	13.95	13.92
(No. of Acres, No.2, per Sheep	34782.00	34.63	32.16	304.57
(No. of Acres, No.2, per Pig	126.52	21.68	15.43	49.61



Note particularly the decreased acreage required in B.C. and generally in D to support each head of stock.



Based on Occupied Lands.

Dividing the acreage in "A" by the acreage per head in "B" for each of the following classes of stock, and subtracting therefrom the No. "A" has at present, gives the extra No. A should carry, if it had water. Multiplying that result by \$25 for horses, \$10.50 for cows, \$4.23 for sheep, and \$8.74 for pigs, gives

Horses	(28743 - 14.310)	X \$25	= 360825	)	
Cows	(68.603- 9.976)	X \$10.50	= 615583.50	)	1.289749 4695640 = 1.85
Sheep	(20.087- 2	X \$ 4.23	= 84959.55)		Increased production \$1.85
Pigs	(32.086- 5498	X \$ 8.74	= 228381.12)		per acre per annum. Cap-
					italized at 5% = \$37.00
					which multiplied by
					19,000,000 \$703,000,000.

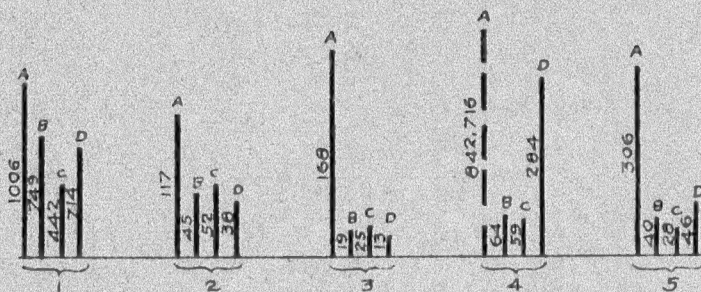
of 1916

The Census give value of horses \$155. It is thought too high and \$100. has been adopted. Cows \$42.00 Sheep \$8.46; Pigs \$10.92; all pre-war prices for the latter three. 25% of horses and cows, 50% of sheep and 80% of pigs can be disposed of annually, without decreasing the herd in numbers and quality. Adopting that gives the numbers \$25.00, \$10.50, \$4.23 and \$8.47.

SCHEDULE 7.

Comparison A. & B based on total areas.

					A	B.	C	D
(No. of acres	No. 1	per farm	1006	749	442	714		
" " " "	per horse	117	44.7	52.0	38.3			
" " " "	" cow	168	18.7	25.0	12.9			
" " " "	" sheep	842716	63.8	58.8	283.7			
2	" " " "	" pig	306	39.9	28.2	46.2		





Adopting the same as in occupied land the result is as follows:-

Horses	(37705 - 14310)	X \$25	= 584875	) Increased produc- tion \$1.12 per acre per annum. Capital- ized at 5% per ann- um = \$22.40 multi- plied by 19,000,000 = \$425,600,000
Cows	(93273 - 9976)	X \$10.50	= 874618.50	
				1893522 ÷ 1.685453 = 1.12.
Sheep	(26477 - 2)	X \$4.25	= 112518.75	
Pigs	(42242 - 5498)	X \$8.75	= 321500	

As in Alberta the herd law is in force over the greater portion, and probably wholly in A. & B. which necessitates the stock being kept in inclosed land, it is probable that <sup>the</sup> fairer comparison is Occupied Lands.

Probably 40% of Units 248 and 249 is Irrigated, C.P. Ry. Western Division. The amount of stock at present in Units 248 and 249 is probably not much more than 30% of what it would carry if fairly well utilized chiefly for stock, at the date of census grain growing without irrigation being the chief development. 1915 being one with a great amount of precipitation. Comparing these units with A based on total area, the result as expressed in percentages is as follows:-

	248 & 249 area 422532 acres	%	A. 1685433 acres	%
Wheat	24793	5.86	104.626	6.21
Oats	21224	5.02	32.585	1.95
Barley	.3775	.89	1387	.08
Flax	1628	.38	184	.0001
Hay	1898	.3	948	.006
Area per unit of population	250.78		348.51	

It will be noted that a somewhat larger percentage in the area in the dry land (Parcel A) is under wheat than is in the irrigated areas - municipal units 248 and 249. That is easily accounted for from the fact that wheat will stand drought better than the other grains. Note particularly, however, the increased percentage in oats, barley, flax and hay; also the acreage per unit of population. With water group "A" would acquire the same conditions to a still greater extent, especially for the growth of legumes, particularly alfalfa. For enrichment of soil legumes are absolutely necessary, therefore as much as possible of them should be grown.

Within the area of the proposed irrigation alfalfa would, no doubt, produce as much per acre as in the neighborhood of Lethbridge which is at an elevation of about 3000 feet. In fact the conditions are probably better from the fact that the ground would be covered throughout the entire winter with sufficient snow to prevent disaster which sometimes occurs from the effects of chinooks, alternately

thawing



thawing and freezing. It has been estimated that taking the present prices of alfalfa the output of that crop on lands in the vicinity of Lethbridge warrants an expenditure for irrigation of \$65.00 per acre. Assuming that thirty per cent of the area, 19,000,000 acres, under discussion can be irrigated and that is probably a reasonably small estimate, makes an area of 5,700,000 acres. The enhanced value of the land would be at least \$10.00 per acres - probably double that amount. Putting that at \$10.00 per acre would amount to \$57,000,000. The enhanced value of the balance 13,300,000 acres would be at least \$3.00 per acre or \$39,900,000 + 57,000,000 = \$96,900,000.

It would, however, require probably one foot of water per acre per annum to supplement the natural rainfall to provide fairly good irrigation conditions so far as moisture is concerned. That would mean for the irrigated portion a delivery of water through each of the 365 days of the year 15617 acre feet or 7874 sec. feet plus loss in transmission. Of course it is only during a portion of the year that the water can be applied for irrigation, but it may be that storage which can be filled up during those portions of the year when water cannot be applied on the land would be sufficient to meet the requirements. Any scheme of irrigation of this size must take into consideration the problem of water storage and said storage to be as near as may be possible to where the water is required to be utilized. A very considerable portion of the Waters of the Brazeau and Baptiste Rivers could probably be diverted into the Saskatchewan River above the suggested intake, also those of the Clearwater and several streams intercepted between intake and Buffalo Lake could probably be utilized where necessary.

As during portions of the year that amount of water would not be available at the intake on the Saskatchewan River, a canal of 10,000 cu. feet capacity would be necessary. (The Upper Chenab Canal in India has a capacity of 13,000 sec. feet.) It would be many years before the scheme could ~~profitably~~ <sup>probably</sup> be worked out to the area mentioned. When worked out as an irrigation proposition probably 80% of the water required for stock watering purposes would come from saturation by reason of the irrigation.

As a solely stock watering proposition one fifth of the volume of water required for irrigation would be ample.

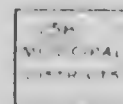
Respectfully submitted.

Wm. Pearce.



# SKETCH

## — LEGEND —



Routes are shown by lines  
travelled over by a horse  
Route suggested  
as possible

Irrigation possibility of diverting water from the N Saskatchewan River for stock purposes on a large tract of land bounded on the North by the North Saskatchewan River & Battle River, on the East by the South Saskatchewan & on the South by the South Saskatchewan & Red Deer Rivers situated in the Provinces of Alberta & Saskatchewan. A considerable portion of said tract could also be advantageously irrigated.

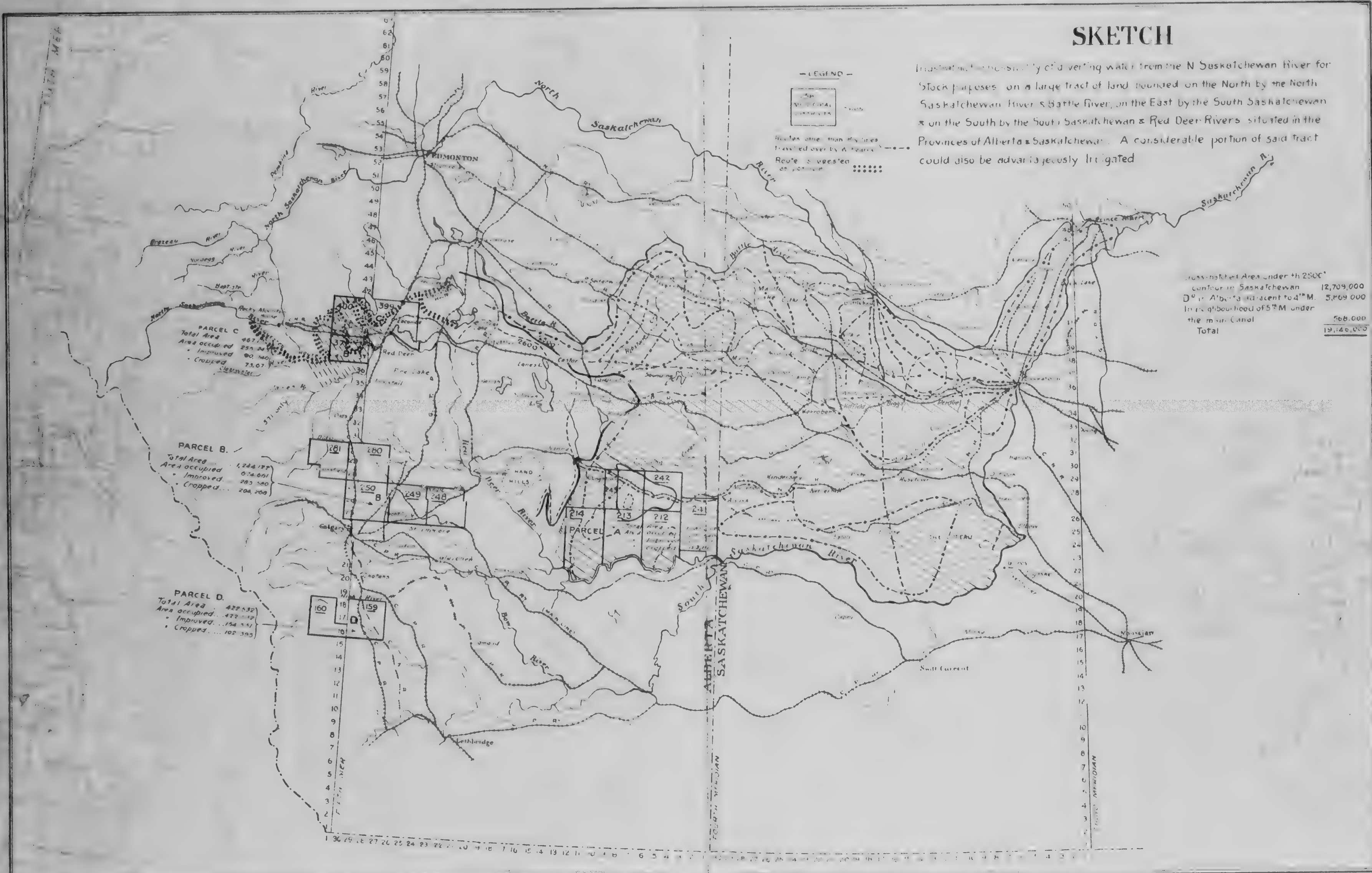
cross-hatched Area under the 2500' contour in Saskatchewan 12,709,000  
Do in Alberta adjacent to 4th M. 5,469,000  
In neighbourhood of S.M. under the main Canal 568,000  
Total 18,746,000

**PARCEL C**  
Total Area 467,177  
Area occupied 259,247  
Improved 80,140  
Cropped 73,071

**PARCEL B**  
Total Area 1,246,122  
Area occupied 974,601  
Improved 285,580  
Cropped 204,200

**PARCEL D**  
Total Area 429,339  
Area occupied 472,149  
Improved 154,541  
Cropped 102,393

**PARCEL A**  
Total Area 1,312,149  
Area occupied 1,312,149  
Improved 1,312,149  
Cropped 1,312,149









Reprinted from Monetary Times, Nov. 29, 1918.

# BETTER BALANCED FARMING.

Land Must Sometimes be Diverted from Wheat-growing  
--Financial Soundness of Mixed Agriculture

By G. R. Harnoch,  
President, Lethbridge Board of Trade.

Nature, that kindly mother, seems to have to resort once in a while to rather drastic measures to enforce attention to the lessons she tries to teach us, day in and day out. She has given us many lessons in the management of farms, and we ought to have realized ere now that her patience in some regards was being stretched to the limit. She sends us the message this year that the quantity of humus or fibre that she provided for our soils is in many places pretty nearly worked out, and that it is up to us to replace it.

All through a long summer day in the middle of June this year Dame Nature had arranged a demonstration of her teaching of this lesson. Looking out from the observation car of the Canadian Pacific Railway train at Moose Jaw in the early morning we saw the beginning of the demonstration, and it continued the whole lee-long day, through Regina, Broadview, Brandon and Portage la Prairie, right into Winnipeg. A strong, cool north-west wind was blowing steadily all day; and the whole country, instead of lying at peace, was standing up vertically to the skies, and moving rapidly to the south-east. Not only that--every single field, heavy soil or light soil, was pock-marked by the strong winds that had already passed over earlier in the season.

What is the reason for all this? Simply that we have been going on, year after year, cultivating our soils into a finer and finer state of tilth, until now we discover that the greater part of the fibre is worked out, and that we have been neglecting to do anything to replace it. We knew well enough that such practice was not in accord with the teachings of our forefathers; but the easy thing to do was to think that there was some special virtue in our soils that would enable them to stand this treatment; and we will have to admit that it was due to us that we should receive the lesson. Here in the southern plains of Alberta we get this lesson in a modified form every year; and, while we leave the Saskatchewan and Manitoba farmers to work out their own salvation, we had better look around and see what we can do for ourselves.

All of the plans that may be devised boil down to a very simple formula. How are we to replace the fibre in the soil? Cow-dung is what we want. How are we to get it? We can't get cow-dung without cows. We can't have cows without pasture. The minister of agriculture for Saskatchewan has been telling his people to get both pasture and a physical means of holding the soil during the time of the spring winds by growing winter rye; and it would be well for Southern Alberta to heed what Hon. Mr. Hothervold says as to that. Some of our leading farmers have already been giving attention to this means of holding their soils together in places that are subject to drift; and Mr. C. S. Noble has grown considerable quantities of rye for seed on his farms at Nobleford, near Lethbridge.



But Mr. Motherwell never talks on this subject without expressing regret that up till now he has not seen any chance for the great bulk of the grain farmers in Saskatchewan to improve their farms by irrigation, and he always envies those farmers in Alberta who already have, or who may by-and-by get irrigation waters for some portion of their lands, for if that anchor is available, a strong chain can be formed to link us up with a stable agriculture. Given irrigation water, the growing of pasture, and that of the finest kind, is easy; that starts the cows, then we get the cow-dung, then the fibre is back into the soil and the problem is solved. Fortunately, too, every grain farmer now feeds his straw to his cattle, and the burning of the straw piles belong to the heathenish rites of past ages.

The grain farmer has been inclined to smile these last few years of high prices at the irrigation farmer growing alfalfa and selling it at low prices; but the boot is on the other foot this year, and the grain farmer is glad to pay a pretty stiff price for alfalfa hay, or any other kind of hay that he can lay his hands on within reasonable distance, so that he may bring his cows through the winter.

Many of our farmers are still not quite alive to the fact that considerable quantities of water that might be used for irrigating their lands are running to waste in the rivers and streams that come from the Rocky Mountains and flow past our doors. Others who have been aware of this have been anxious to get these waters; while others again, although they have had the knowledge, have said that they think the cost of getting the water on to their farms would be too great, and that they prefer to go on grain farming because they do not know enough about irrigation farming to be able to make a success of that business. It is a striking fact, however, that you meet hardly a single farmer who does not say, "Oh, if I could only get enough irrigation water to grow enough alfalfa or other hay to feed my stock through a dry season, and to help out with my water supply, I would not trade this farm for anything under the sun". And when you tell him that besides all that he might rotate the use of the water around the farm, putting, say forty acres of his quarter-section under alfalfa for a few years, and then change around to another forty acres, he becomes enthusiastic at once and wants to know more about it. The irrigation engineers have now begun to look at the matter from this angle. Hitherto, and naturally, they have been thinking along the lines that were laid down for the use of irrigation water in the United States, where the projects were so costly that it was an economic necessity to keep the available waters within concentrated areas. But we are not exactly in that position; and there is this other point of difference here; that all our lands in southern Alberta are of agricultural service, whereas in the arid regions of the States the irrigated lands are now worth as much as two and three hundred dollars an acre, while the lands immediately adjoining are not worth thirty cents.

The Minister of the Interior, Hon. Arthur Meighen, has recognized that further investigation of these matters should be carried out, and the Commissioner of Irrigation, Mr. Peters, is now making survey to see if the waters available in the Old Man River above Macleod can be carried farther afield than was at first contemplated for it is recognized that the duty of a government is to make available



the greatest use of any public asset for the greatest number of people. When these surveys have been completed it will be possible to say how many farms can derive benefit from these waters, and what the cost per acre will run to, so that those farmers who are fortunate enough to find their lands under the proposed canals will know whether they should get together to find ways and means to have the project gone on with.

Other projects for getting irrigation waters to other parts of this district will then be considered in the light of what is developed in the Lethbridge Northern project above referred to, and farmers in the regions to the south-east of Lethbridge will wait with some impatience to learn what transpires up around Carmangay, Monarch, Barons, Kipp, Iron Springs and Turin, for if the plan for bringing irrigation water to 100,000 acres in those districts comes to be successfully developed, it will mean a great deal to the farmers that are situated among the 350,000 irrigable acres within another area south-east of Lethbridge that preliminary surveys have shown may be irrigated from other streams, for it will help them to consider how they, in turn, may set about getting other waters down on to their lands.

There is a continuing temptation in a new country to put the cart before the horse; to omit enquiry into such questions as to how we should harness the land and the water together, and then to proceed to heroic measures in the emergencies that suddenly arise. We are apt to forget that it is one of the important parts of our business to provide against emergencies-aye, more than that; we forget that we should always have our scout out to see that the country is being prepared for the advancing needs of our people. The present urgent emergency is the provision of green feed for the greatly increased numbers of cattle that have been growing up on our grain farms since our farmers started out in this profitable direction from 1914 onwards. It is true we have made considerable advances these last few years in developing well water supplies, and that has helped the cattle raising industry not a little. But we have practically been asleep in the matter of developing the rivers and streams for further irrigation, and all the time these valuable waters have been flowing uselessly past our very door. We have been niggardly in the use of our wits and parsimonious in the use of our farmers' and trade organizations, which should have been devoting more of their efforts to studying these resources, and to impressing upon the governments that we were earnest in our desire that these water resources should be developed.

It may be possible a little later on to ascertain just what has been the cost of moving hay from the north and cattle from the south this season; but the guess may readily be hazarded that the amount that has been spent during the last few years in further enquiries into the possibilities for making use of these valuable irrigation waters will not amount to a fraction of the cost of moving hay and cattle during this one season of emergency. Maybe we shall presently come to the reluctant and belated conclusion that we want better balanced citizenship in order to come at better balanced farming. Just think of it! Here we are sitting by and looking at irrigation water flowing by our door, with all its great potentialities for the raising of hay; and then waking up suddenly and making a wild and woolly rush upon the governments and the railway



companies for assistance to move our live stock to feed, and feed to our live stock. There is the situation over a considerable part of our prairie country. They are just about as foolish over in British Columbia; acres and acres of fine hill pasture there grow up and die every year; and thousands of cubic feet of water are allowed to run down past fine bench lands that would make splendid irrigated farms for the raising of winter feed for the cattle that would come down, rolling fat, when the winter snows began to cover up the mountain pasture. It is at least gratifying to know that even a small fraction of these pastures is being utilized this summer for some of our prairie cattle; and it would be well to have in mind that this asset should not be neglected in the intervening year or two that must elapse before the mountain waters can be made available for irrigation. Unfortunately, not a sufficient number of our prairie farmers have been aware of these British Columbia pasturages to make any considerable movement of cattle up to the mountains, and consequently it has not seemed feasible to ask for the same reduced rate privileges westwards that have been available northwards for live stock; but these hill grasses should be carefully kept in mind with a view to their further economic use.

We have now before us two eminently practical demonstrations that irrigation will greatly improve the fruitfulness of the farms in the Lethbridge district in Southern Alberta. The standing illustration is, of course, the one hundred and fifty thousand acres around Magrath, Raymond, Coaldale and Lethbridge that have been drawing water these fifteen years back from the St. Mary's River. These lands steadily produce crops of three to four and a half tons per acre of alfalfa. Such of these lands as are put into wheat make crops of forty bushels and over if the ground is irrigated the previous fall, and if the water is applied at the right time during the summer. And it will be remembered that nature gave just the same means to produce the phenomenal grain crop of 1915; the great fall irrigation in October, 1914, and rains at the right times during the spring and summer of 1915, which brought the fifty and sixty bushel wheat crops of that year of blessed memory. The quantities of the chemical constituents of our soils--nitrogen, phosphoric acid and potash -- are perhaps almost illimitable, but the soil itself, and these chemicals in it, cannot be held together unless we keep up its physical condition by seeing that the humus is not allowed to become depleted.



Ottawa, 21st February, 1919.

The attached memo and sketch is intended to show what can be done by water supply in a very large tract of country embraced between the North and South Saskatchewan and the Battle and Red Deer Rivers in Saskatchewan and Alberta, some 19,000,000 acres of the very best soil, already fairly well settled by a class excelled by none and equalled in few parts in either industry, intelligence or enterprise. A tract most of it fully supplied, the balance fairly, by railway facilities and those portions somewhat remote therefrom can be most cheaply so furnished; contiguous to fuel and building materials including a fairly plentiful supply of fair road material. With plenty of water this tract will prove to be among the best productive portions of the Canadian West.

Every observant individual in the Canadian Prairie Provinces must have been impressed with the fact that as the rapid yearly increase in cultivation has been extended causing pulverization of the soil; in even a greater ratio has the drifting of that soil increased, removing the soil of the greatest values and depositing it where not desired, consequently involving a huge annual loss the better the cultivation the more drifting. If such continues a large percentage of the best agricultural districts will rapidly become a desert waste.

This disastrous condition can be met by furnishing the soil with the properties necessary to mitigate, in most cases absolutely prevent drifting namely - by keeping stock for which pasturage and forage is required and for their promotion water is necessary and an abundant supply of same is now running to waste pass the tract under discussion.

The keeping of stock furnishes the manure which renders the soil so that it will not readily drift and also increases its fertility.

Attention is particularly directed to an article (copy enclosed) which appeared in the Monetary Times of the twenty-ninth of November, 1918, intituled "Better Balanced Farming" by the talented president of the Lethbridge Board of Trade, G.R. Marnoch. The perusal of said article is especially interesting to everyone who takes an interest in the permanent progress of the west; agriculture is the basic resource of the said provinces and as that increases all other interests will naturally follow in turn.

Your attention is also particularly directed to what the late Minister of Agriculture for the Province of Saskatchewan states, cited in said article, "As an authority on the subject the Hon. Mr. Motherwell is probably without a peer".

Wm. Pearce.







